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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/721,851	11/25/2003	Raymond W. Wong	D/A3596	8019

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EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
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1714

DATE MAILED: 07/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/721,851	Applicant(s) WONG ET AL.	
	Examiner Callie E. Shosho	Art Unit 1714	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-80 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-80 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>2/5/04, 4/15/04, & 5/4/05.</u> | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Information Disclosure Statement

1. Application No. 10/722,164 and 10/722,162 have been stricken from the IDS filed 2/5/04 since these applications are not available to the public. However, it is noted that Application No. 10/722,164, now U.S. Patent 6,878,198, and Application No. 10/722,162, now U.S. Patent 6,858,070, have been considered and the patents cited on the 892 form included with this office action.

Claim Objections

2. Claims 10 and 11 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

Claim 10 and claim 11, which depend on claim 4, each recite that R₃ is a branched unsubstituted alkyl group having about 34 carbon atoms while claim 4 recites that R₃ is alkylene, arylene, arylalkylene, or alkylarylene. Thus, each of claim 10 and claim 11 fails to further limit the scope of the claim on which each depends, namely claim 4, given that claim 10 and claim 11 each recite R₃ outside the scope of claim 4. That is, while claim 4 requires R₃ that is alkylene, arylene, arylalkylene, or alkylarylene, claim 10 and claim 11 each require R₃ that is alkyl group.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 1-80 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 60-68, 70-75, 77-78, and 80 each recite “high shear mixing”. The scope of the claims is confusing because it is not clear what is meant by “high” or what values of shear or types of shear mixing are encompassed by this phrase.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 1-4, 6, 9, 13, 38-48, 54-59, and 78 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiyama et al. (U.S. 5,906,678) in view of Oliver et al. (U.S. 5,593,486), Jaeger et al. (U.S. 5,164,232), and Henseleit et al. (U.S. 5,164,232).

Fujiyama et al. disclose process for preparing hot melt ink comprising ink carrier and 3-20% of at least one or more coloring agents that include pigment and dye such as phthalocyanine wherein the method comprises admixing carbon black and polyethylene, extruding the mixture, adding non-polar component, i.e. wax, and then subjecting the resulting mixture to mixing using three roll mill. It is well known, as disclosed by Henseleit et al. (col.8, lines 53-54), that a three roll mill is a high shear mixer. The wax includes polyethylene wax. It is noted from example 2 that the ratio of polyethylene to carbon black is, for instance, 0.8 (40/50) (col.2, lines 38-45 and 53-67, col.5, line 66-col.6, line 5, and col.6, lines 16-28).

The difference between Fujiyama et al. and the present claimed invention is the requirement in the claims of (a) polar component that is a dispersant and (b) extruder temperature.

With respect to difference (a), Oliver et al., which is drawn to hot melt ink, disclose the use of mixture of monoamide and tetra-amide dimer acid as ink vehicle in order to produce image that is able to withstand severe storage condition without melting or exhibiting offset and that has high optical transmission, hue, and chroma. Oliver et al. also disclose the equivalence and interchangeability of using mixture of monoamide and tetra-amide dimer acid with using polyethylene (col.8, lines 16-26, col.8, line 67-col.9, line 4, col.9, lines 34-46, and col.10, lines 38-47). It is well known, as disclosed in Jaeger et al. (col.2, lines 65-68), that dimer acid-based tetra-amide is obtained from dimer acid, ethylene diamine, and fatty acid.

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use mixture of monoamide and tetra-amide with the carbon black of Fujiyama et al. in order to produce ink image that is able to withstand severe storage condition without melting or exhibiting offset and that has high optical transmission, hue, and chroma, and thereby arrive at the claimed invention.

With respect to difference (b), although there is no explicit disclosure in Fujiyama et al. or Oliver et al. that the extrusion occurs at temperature that is at or above about the peak crystallization temperature of the dispersant and below about the melting temperature of the dispersant, given that Fujiyama et al. in combination with Oliver et al. disclose extruding combination of pigment and tetra-amide as presently claimed, it is clear that the extrusion must intrinsically occur at temperature, including that presently claimed, such that the tetra-amide is

suitable for extruding, and thus one of ordinary skill in the art would have arrived at the claimed invention.

On the other hand, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to control the temperature of the extruder to temperatures, including that presently claimed, in order that the tetra-amide and pigment are able to be effectively extruded, and thus one of ordinary skill in the art would have arrived at the claimed invention.

8. Claims 35-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiyama et al. in view of Oliver et al., Jaeger et al., and Henseleit et al. as applied to claims 1-4, 6, 9, 13, 38-48, 54-59, and 78 above, and further in view of Yu et al. (U.S. 6,493,943).

The difference between Fujiyama et al. in view of Oliver et al., Jaeger et al., and Henseleit et al. and the present claimed invention is the requirement in the claims of pigment having acidic or basic groups on the surface.

Yu et al. disclose the use of surface treated pigment having acidic or basic groups on the surface and further disclose that such pigments are suitable for use in hot melt ink. The motivation for using such pigment is to produce ink with improved storage stability as well as good waterfastness and color intensity (col.4, lines 51-52, col.5, lines 5-12, 27-34, and 57-61, col.6, lines 17-28, and col.10, lines 14-15).

In light of the motivation for using pigment having acidic or basic groups on the surface disclosed by Yu et al. as described above, it therefore would have been obvious to one of ordinary skill in the art to use such pigment in the ink of Fujiyama et al. in order to produce ink

with improved storage stability as well as good waterfastness and color intensity, and thereby arrive at the claimed invention.

9. Claim 80 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujiyama et al. (U.S. 5,906,678) in view of Oliver et al. (U.S. 5,593,486), Jaeger et al. (U.S. 5,164,232), Henseleit et al. (U.S. 5,164,232) and Yu et al. (U.S. 6,493,943).

Fujiyama et al. disclose process for preparing hot melt ink comprising ink carrier and 3-20% of at least one or more coloring agents that include pigment and dye such as phthalocyanine wherein the method comprises admixing carbon black and polyethylene, extruding the mixture, adding non-polar component, i.e. wax, and then subjecting the resulting mixture to mixing using three roll mill. It is well known, as disclosed by Henseleit et al. (col.8, lines 53-54), that a three roll mill is a high shear mixer (col.2, lines 38-45 and 53-67, col.5, line 66-col.6, line 5, and col.6, lines 16-28).

The difference between Fujiyama et al. and the present claimed invention is the requirement in the claims of (a) polar component that is a dispersant, (b) pigment having acidic or basic groups on the surface, and (c) extruder temperature.

With respect to difference (a), Oliver et al., which is drawn to hot melt ink, disclose the use of mixture of monoamide and tetra-amide dimer acid as ink vehicle in order to produce image that is able to withstand severe storage condition without melting or exhibiting offset and that has high optical transmission, hue, and chroma. Oliver et al. also disclose the equivalence and interchangeability of using mixture of monoamide and tetra-amide dimer acid with using polyethylene (col.8, lines 16-26, col.8, line 67-col.9, line 4, col.9, lines 34-46, and col.10, lines

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38-47). It is well known, as disclosed in Jaeger et al. (col.2, lines 65-68), that dimer acid-based tetra-amide is obtained from dimer acid, ethylene diamine, and fatty acid.

With respect to difference (b), Yu et al. disclose the use of surface treated pigment having acidic or basic groups on the surface and further disclose that such pigments are suitable for use in hot melt ink. The motivation for using such pigment is to produce ink with improved storage stability as well as good waterfastness and color intensity (col.4, lines 51-52, col.5, lines 5-12, 27-34, and 57-61, col.6, lines 17-28, and col.10, lines 14-15).

In light of the above, it therefore would have been obvious to one of ordinary skill in the art to use mixture of monoamide and tetra-amide with the carbon black in Fujiyama et al. wherein the carbon black has acidic or basic groups on the surface in order to produce ink image that is able to withstand severe storage condition without melting or exhibiting offset and that has high optical transmission, hue, and chroma and also has good waterfastness and color intensity, and thereby arrive at the claimed invention.

With respect to difference (c), although there is no explicit disclosure in Fujiyama et al., Oliver et al., or Yu et al. that the extrusion occurs at temperature that is at or above about the peak crystallization temperature of the dispersant and below about the melting temperature of the dispersant, given that Fujiyama et al. in combination with Oliver et al. disclose extruding combination of pigment and tetra-amide as presently claimed, it is clear that the extrusion must intrinsically occur at temperature, including that presently claimed, such that the tetra-amide is suitable for extruding, and thus one of ordinary skill in the art would have arrived at the claimed invention.

On the other hand, it would have been within the skill level of, as well as obvious to, one of ordinary skill in the art to control the temperature of the extruder to temperatures, including that presently claimed, in order that the tetra-amide and pigment are able to be effectively extruded, and thus one of ordinary skill in the art would have arrived at the claimed invention.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Wong et al. (U.S. 6,858,070) disclose phase change ink monoamide and tetra-amide, polyalkylene succinimide, and pigment wherein the ink is prepared by mixing in an extruder pigment and tetra-amide, followed by adding additional ingredients, followed by high shear mixing. However, given the effective filing date of the reference, Wong et al. is not applicable against the present claims under any subsection of 35 USC 102.

Drappel et al. (U.S. 6,878,198) disclose phase change ink comprising ink vehicle containing monoamide and tetra-amide. There is no disclosure of mixing pigment and tetra-amide in an extruder. Further, given the effective filing date of the reference, Drappel et al. is not applicable against the present claims under any subsection of 35 USC 102.

Elwakil (U.S. 5,574,078) teaches hot melt ink produced by mixing pigment and tetra-amide at high shear rates and then adding further ingredients, however, there is no disclosure of extrusion as presently claimed

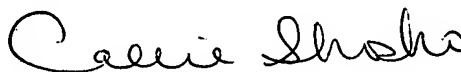
Kanabayashi et al. (U.S. 5,409,530) disclose preparing hot melt ink by heat melting material having polar group and non-polar group with colorant and then adding non-polar material, however, there is no disclosure of extrusion as presently claimed.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
6/23/06